

## Linear Programming Practice

These problems are from a worksheet online. The answers are all at: <http://home.cvc.org/math/halg2/Linear%20Programming%20Worksheet%20key.pdf>

Do each problem as we have in class, showing variables, constraints, objective function, graphs, etc. Then check your answers in the .pdf

Questions:

The area of a parking lot is 600 square meters. A car requires 6 square meters. A bus requires 30 square meters. The attendant can handle only 60 vehicles. If a car is charged \$2.50 and a bus \$7.50, how many of each should be accepted to maximize income?

The B & W Leather Company wants to add handmade belts and wallets to its product line. Each belt nets the company \$18 in profit, and each wallet nets \$12. Both belts and wallets require cutting and sewing. Belts require 2 hours of cutting time and 6 hours of sewing time. Wallets require 3 hours of cutting time and 3 hours of sewing time. If the cutting machine is available 12 hours a week and the sewing machine is available 18 hours per week, what ratio of belts and wallets will produce the most profit within the constraints?

Toys-A-Go makes toys at Plant A and Plant B. Plant A needs to make a minimum of 1000 toy dump trucks and fire engines. Plant B needs to make a minimum of 800 toy dump trucks and fire engines. Plant A can make 10 toy dump trucks and 5 toy fire engines per hour. Plant B can produce 5 toy dump trucks and 15 toy fire engines per hour. It costs \$30 per hour to produce toy dump trucks and \$35 per hour to operate produce toy fire engines. How many hours should be spent on each toy in order to minimize cost? What is the minimum cost?

A diet is to include at least 140 milligrams of Vitamin A and at least 145 milligrams of Vitamin B. These requirements can be obtained from two types of food. Type X contains 10 milligrams of Vitamin A and 20 milligrams of Vitamin B per pound. Type Y contains 30 milligrams of Vitamin A and 15 milligrams of Vitamin B per pound. If type X food costs \$12 per pound and type Y food costs \$8 per pound how many pounds of each type of food should be purchased to satisfy the requirements at the minimum cost?

The Cruiser Bicycle Company makes two styles of bicycles: the Traveler, which sells for \$300, and the Tourister, which sells \$600. Each bicycle has the same frame and tires, but the assembly and painting time required for the Traveler is only 1 hour, while it is 3 hours for the Tourister. There are 300 frames and 360 hours of labor available for production. How many bicycles of each model should be produced to maximize revenue?